

**REMARKS**

Claim 1 has been amended to incorporate subject matter from Claim 2. Further support for amended Claim 1 can be found in Working Example 1 on page 10 of the specification.

Claim 2 has been canceled. Thus, no new matter has been added. Upon entry of this Amendment, which is respectfully requested, Claims 1 and 3-24 are pending, of which, Claims 15-24 have been withdrawn from consideration.

**Response to Claim Rejections Under §§ 102 and 103**

Claims 1-3 and 6-8 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,227,053 to Brym.

Claims 3, 4, and 8-14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brym in view of U.S. Patent No. 5,501,801 to Zhang et al.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Brym in view of Zhang et al as applied to claim 4 above, and further in view of U.S. Patent No. 6,013,187 to Burns et al.

Applicants respectfully traverse.

The present claims relate to a method for removing mercury from a fluid stream, comprising the steps of: providing a composite material comprising a substrate and catalyst particles; and contacting a fluid stream with said composite, wherein said composite adsorbs and/or oxidizes said mercury. Further, the catalyst particles are dispersed in the substrate. In other words, according to the present invention, the catalyst is within the matrix where it cannot be attrited.

As demonstrated by Working Example 1 of the present specification, a silica-titania composite is formed wherein  $\text{TiO}_2$  was well distributed in the  $\text{SiO}_2$  matrix, forming chemical

bonds with the silica matrix. Accordingly, a new “composite” material is created, consisting of silica-titania bonds.

In contrast, Brym discloses a means of removing mercury from a fluid stream wherein the filter means includes multiple compartments with purification media therein with two of the compartments including plates coated with a photoactivated catalyst (e.g., titanium oxide). *See*, col. 6, line 66 and Abstract. Brym further discloses that the plates are preferably glass or ceramic plates. *See*, col. 8, lines 48-49. Thus, the  $\text{TiO}_2$  of Brym is on the surface of the substrate and could be easily attrited.

Similarly, Zhang discloses a photocatalyst affixed to a particulate support material. *See*, col. 5, lines 30-31. In particular, Zhang discloses a method for preparing a supported photocatalyst, whereby an aqueous slurry of photocatalyst particles is admixed with a particulate support material for a period sufficient to coat the outer surface of the support material with a desired amount of the photocatalyst. *See*, column 10, lines 3-11. Thus, the  $\text{TiO}_2$  of Zhang is on the surface of the substrate and could be easily attrited.

Burns fails to make up for the deficiencies of Brym and Zhang discussed above.

Accordingly, Brym, Zhang and Burns fail to anticipate or render obvious the present claims. Withdrawal of the rejections is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Date: December 12, 2008

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